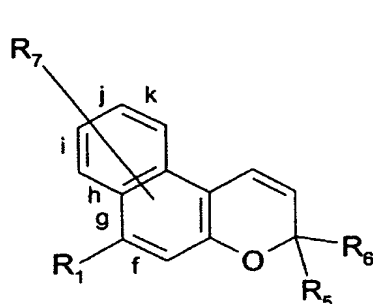


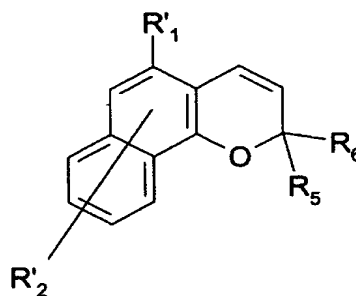
## CLAIMS

1. A composition comprising, in a cosmetically acceptable medium, at least one oily phase and at least one photochromic organic dye of formula

5 (I) or (II):



(I)



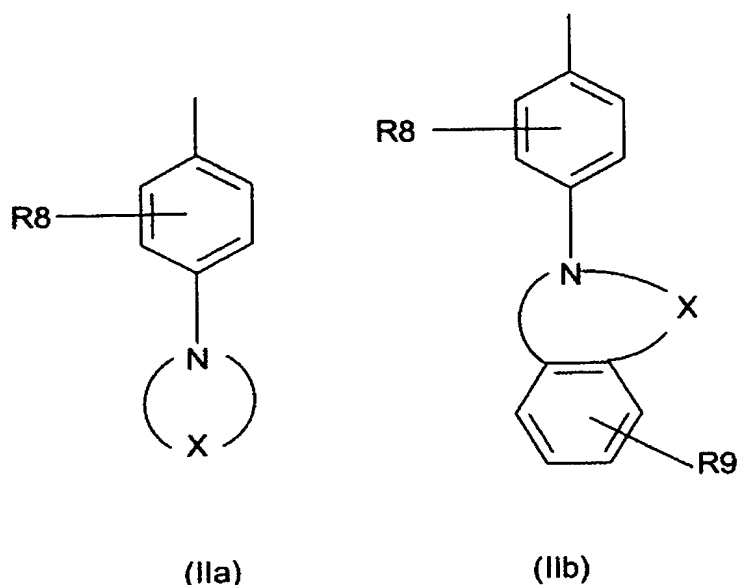
(II)

in which:

\* R1 represents:

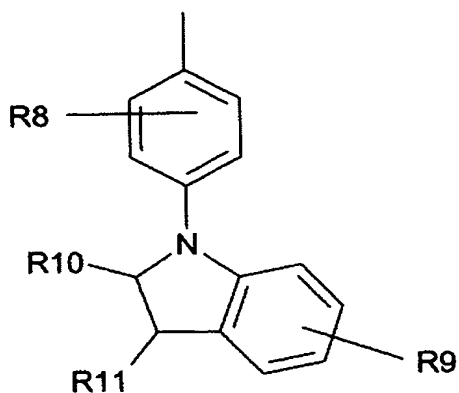
- (i) a hydrogen atom;
- 10 - (ii) a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing from 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated;
- 15 - (iii) a hydrocarbon-based ring formed with one of the bonds "f" or "gh" and the radical R7; or
- (iv) a group selected from the group consisting of -COOR4, -C(O)NR2R3, -NR2R3, -OR4 and -SR4, in which:
  - R2 and R3 either represent, independently of
  - 20 each other, a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 1 to 20

carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P,  
or, taken together with the nitrogen atom to which they  
5 are attached, form a saturated or unsaturated hydrocarbon-based heterocycle containing 3-10 carbon atoms and optionally 1-5 other hetero atoms selected from the group consisting of N, O, S, Si and P, the ring optionally being substituted with at least one  
10 linear, branched or cyclic, saturated or unsaturated hydrocarbon-based radical containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P;  
.  
15 - R4 represents a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 1 to 20 carbon atoms, which is optionally halogenated or perhalogenated and/or optionally comprising 1 to 5 hetero atoms selected from the group  
20 consisting of N, O, S, Si and P;  
\* R5 and R6 represent, independently of each other, a group selected from the group consisting of:  
- (i) the saturated cyclic aminoaryl groups of formula (IIa) or (IIb):



in which the ring comprising N and X is a saturated ring containing in total 3 to 30 atoms, including nitrogen, the remainder being carbon atoms and/or hetero atoms selected from the group consisting of O, S, Si and P and/or groups selected from the group consisting of -NH and -NR with R representing a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based radical containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P;

- (ii) the indolinoaryl groups of formula (III):



(III)

in which R10 and R11 represent, independently of each other, a group selected from the group consisting of

(i) linear, branched or cyclic, saturated or

5 unsaturated hydrocarbon-based groups containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated;

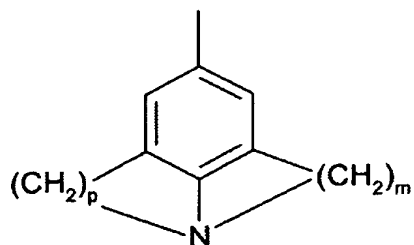
(ii) halogen atoms; (iii) -CN (nitrile), -COOH

10 (carboxylate) or -NO<sub>2</sub> (nitro) groups; (iv) a hydrogen atom; (v) a group selected from the group consisting of -C(O)NR<sub>2</sub>R<sub>3</sub>, -NR<sub>2</sub>R<sub>3</sub>, -OR<sub>4</sub> and -SR<sub>4</sub> with R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> having the meanings given above; (vi) the radicals R10 and R11 together possibly forming a saturated or

15 unsaturated hydrocarbon-based ring containing in total 5 to 8 atoms (including the atoms of the indoline ring), the atoms being selected from the group consisting of C, O, S and/or NR with R representing H or a linear, branched or cyclic, saturated or

unsaturated hydrocarbon-based radical containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P,

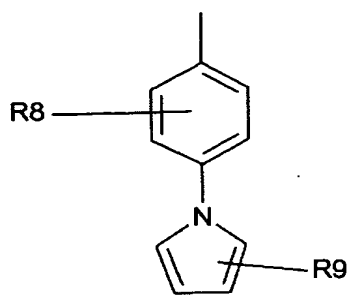
5           - (iii) the groups of formula (IV):



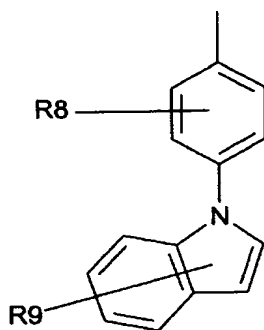
(IV)

in which m and p are, independently of each other, integers ranging from 2 to 5;

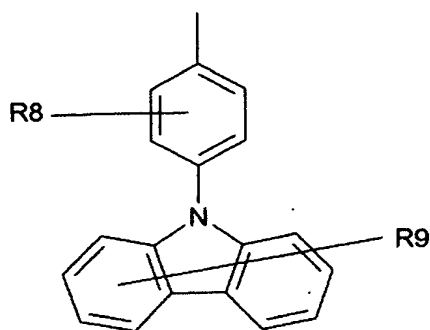
          - (iv) the unsaturated cyclic aminoaryl groups of  
10   formula (Va), (Vb) or (Vc):



(Va)



(Vb)



(Vc)

in which R8 and R9 represent, independently of each other, a group selected from the group consisting of

(i) linear, branched or cyclic, saturated or

5 unsaturated hydrocarbon-based groups containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated;

(ii) halogen atoms; (iii) -CN (nitrile), -COOH

10 (carboxylate) or -NO<sub>2</sub> (nitro) groups; (iv) a hydrogen atom; (v) a group selected from the group consisting of -C(O)NR<sub>2</sub>R<sub>3</sub>, -NR<sub>2</sub>R<sub>3</sub>, -OR<sub>4</sub> and -SR<sub>4</sub> with R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> having the meanings given above;

- (v) a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P;

\* R7 represents a group selected from the group consisting of:

- (i) linear, branched or cyclic, saturated or unsaturated hydrocarbon-based groups containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated;
- (ii) halogen atoms;
- (iii) -CN (nitrile), -COOH (carboxylate), -NO<sub>2</sub> (nitro), -N=N- (azo), =NH (imino) or -CONH<sub>2</sub> (amide) groups;
- (iv) a hydrogen atom;
- (v) a group selected from the group consisting of -C(O)NR<sub>2</sub>R<sub>3</sub>, -NR<sub>2</sub>R<sub>3</sub>, -OR<sub>4</sub> and -SR<sub>4</sub> with R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> having the meanings given above;
- (vi) the radical R7 also possibly forming, with one of the bonds "i", "j", "k" or "g,h" taken with the radical R1, or "f" taken with the radical R1, a saturated hydrocarbon-based ring containing in total 3 to 8 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P;

\* R'1 represents a group selected from the group consisting of:

- (i) a hydrogen atom;
- (ii) a linear, branched or cyclic, saturated or
- 5 unsaturated hydrocarbon-based group containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated;
- (iii) a group selected from the group consisting of -
- 10 C(O)NR<sub>2</sub>R<sub>3</sub>, -NR<sub>2</sub>R<sub>3</sub>, -OR<sub>4</sub> and -SR<sub>4</sub>, with R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> having the meanings given above;

\* R'2 represents a group selected from the group consisting of:

- (i) linear, branched or cyclic, saturated or
- 15 unsaturated hydrocarbon-based groups containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated;
- (ii) halogen atoms;
- 20 - (iii) -CN (nitrile), -COOH (carboxylate), -NO<sub>2</sub> (nitro), -N=N- (azo), =NH (imino) or -CONH<sub>2</sub> (amide) groups;
- (iv) a hydrogen atom;
- (v) a group selected from the group consisting of -
- 25 C(O)NR<sub>2</sub>R<sub>3</sub>, -NR<sub>2</sub>R<sub>3</sub>, -OR<sub>4</sub> and -SR<sub>4</sub>, with R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> having the meanings given above,

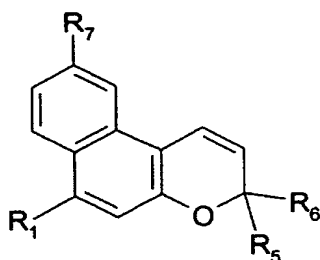
the organic dye being soluble in the oily phase of the



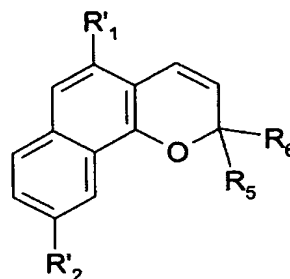
composition.

2. The composition according to Claim 1, in which the photochromic organic dye corresponds to one of the formulae (Ia) and (IIa) below:

5



(Ia)



(IIa)

in which R<sub>1</sub>, R<sub>5</sub>, R<sub>6</sub>, R<sub>7</sub>, R'<sub>1</sub> and R'<sub>2</sub> are defined as in Claim 1.

10

3. The composition according to Claim 1, in which R<sub>1</sub> represents a hydrogen atom; a hydrocarbon-based ring with one of the bonds "f" or "gh" and the radical R<sub>7</sub>; or a group selected from the group consisting of -COOR<sub>4</sub>, -NR<sub>2</sub>R<sub>3</sub>, -OR<sub>4</sub> and -SR<sub>4</sub>, in which:

15

- R<sub>2</sub> and R<sub>3</sub> either represent, independently of each other, a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and

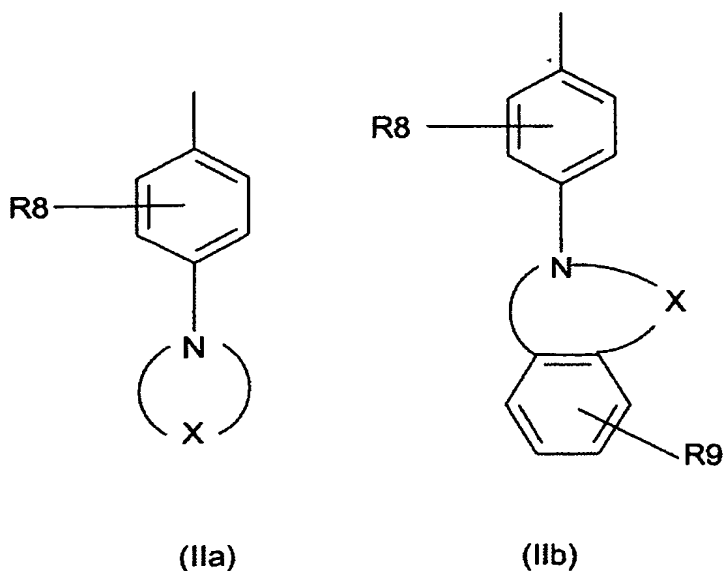
20

P, or, taken together with the nitrogen atom to which they

are attached, form a saturated or unsaturated hydrocarbon-based heterocycle containing 3-10 carbon atoms and optionally 1-5 other hetero atoms selected from the group consisting of N, O, S, Si and P, the  
5 ring optionally being substituted with at least one linear, branched or cyclic, saturated or unsaturated hydrocarbon-based radical containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and  
10 P;

- R4 represents a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 1 to 20 carbon atoms, optionally halogenated or perhalogenated, and/or optionally comprising 1 to 5  
15 hetero atoms selected from the group consisting of N, O, S, Si and P.

4. The composition according to Claim 1, in which R5 and R6 represent, independently of each other, a group selected from the group consisting of:  
20 - the saturated cyclic aminoaryl groups of formula (IIa) or (IIb):



in which the ring comprising N and X is a saturated ring which contains in total 3 to 30 atoms, including nitrogen, the remainder being carbon atoms and/or  
 5 hetero atoms selected from the group consisting of O, S, Si and P and/or groups selected from the group consisting of -NH and -NR with R representing a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based radical containing 1 to 20 carbon  
 10 atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P;

- a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 1 to 30,  
 15 preferably 2-18 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P; with R2, R3 and R4 having the

meanings given in Claim 1.

5. The composition according to Claim 1, in which R7 represents a group selected from the group consisting of:

- 5 - (i) linear, branched or cyclic, saturated or unsaturated hydrocarbon-based groups containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated;
- 10 - (ii) halogen atoms, especially F, Br and/or Cl;
- (iii) -CN (nitrile), -COOH (carboxylate), -NO<sub>2</sub> (nitro), -N=N- (azo), =NH (imino) or -CONH<sub>2</sub> (amide) groups;
- (iv) a hydrogen atom;
- 15 - (v) a group selected from the group consisting of -NR<sub>2</sub>R<sub>3</sub>, -OR<sub>4</sub> and -SR<sub>4</sub>, with R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> having the meanings given in Claim 1;
- (vi) the radical R7 also possibly forming, with one of the bonds "i", "j", "k" or "g,h" taken with the radical R1, or "f" taken with the radical R1, a saturated hydrocarbon-based ring containing in total 3 to 8 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P.

25 6. The composition according to Claim 1, in which R'1 represents hydrogen or a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based

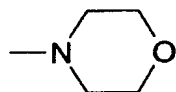
group containing 1 to 30 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P, and/or optionally halogenated or perhalogenated.

5                   7.    The composition according to Claim 1, in which R'<sup>2</sup> represents hydrogen or a group selected from the group consisting of -NO<sub>2</sub>, -NR<sup>2</sup>R<sup>3</sup> and -C(O)NR<sup>2</sup>R<sup>3</sup>, in which R<sup>2</sup> and R<sup>3</sup> either represent, independently of each other, a linear, branched or cyclic, saturated or  
10   unsaturated hydrocarbon-based group containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P; or, taken together with the nitrogen atom to which they are attached, form a saturated or unsaturated  
15   hydrocarbon-based heterocycle containing 3-10 carbon atoms and optionally 1-5 other hetero atoms selected from the group consisting of N, O, S, Si and P, the ring optionally being substituted with at least one linear, branched or cyclic, saturated or unsaturated  
20   hydrocarbon-based radical containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P.

                  8.    The composition according to Claim 1, in  
25   which the organic dye is of formula (I) or (Ia) for which:

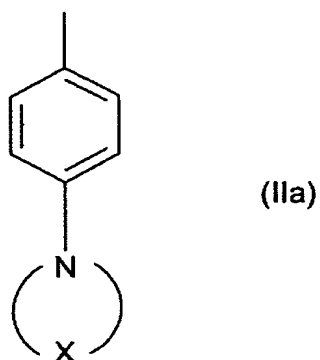
\* R<sup>1</sup> represents hydrogen; or a group -COOR with R being

a saturated hydrocarbon-based radical containing 1 to 12 carbon atoms; or a group



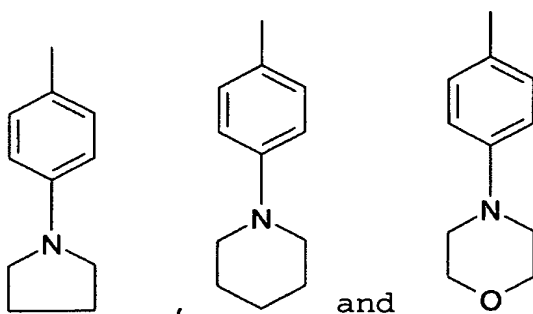
and/or

- 5 \* R5 and R6 represent, independently of each other, either (i) a group of formula (IIa):



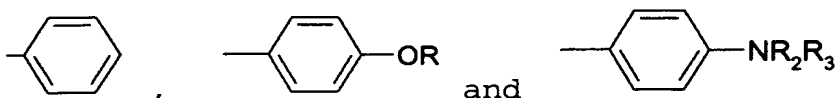
in which the ring comprising N and X is a saturated ring selected from the group consisting of groups of

10 formulae:



or (ii) a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 5 to 14 carbon atoms, optionally comprising 1 or 2 hetero atoms

15 selected from the group consisting of



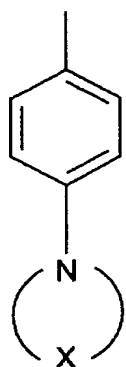
in which R is a saturated hydrocarbon-based radical containing 1 to 12 carbon atoms; and R<sub>2</sub> and R<sub>3</sub> are, independently of each other, a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 1 to 20 carbon atoms, optionally comprising 1 to 5 hetero atoms selected from the group consisting of N, O, S, Si and P; and/or

\* R<sub>7</sub> represents a hydrogen atom or a group -NR<sub>2</sub>R<sub>3</sub>, with R<sub>2</sub> and R<sub>3</sub> representing, independently of each other, a linear or branched, saturated hydrocarbon-based group containing 1 to 12 carbon atoms.

9. The composition according to Claim 1, in which the organic dye is of formula (II) for which:

\* R'<sub>1</sub> represents hydrogen or a group -COOR with R being a saturated hydrocarbon-based radical containing 1 to 12 carbon atoms; and/or

\* R<sub>5</sub> and R<sub>6</sub> represent, independently of each other, either (i) a group of formula (IIa):



(IIa)

in which the ring comprising N and X is a saturated ring containing in total 4 to 7 atoms including nitrogen;

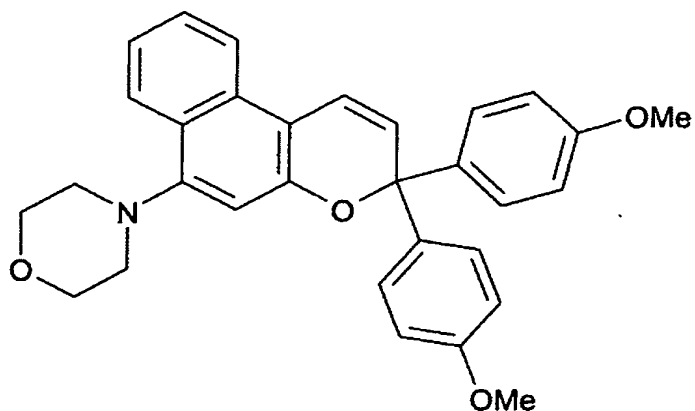
5 or (ii) a linear, branched or cyclic, saturated or unsaturated hydrocarbon-based group containing 5 to 14 carbon atoms, optionally comprising 1 or 2 hetero atoms selected from the group consisting of N, O and S; and/or

10 \* R'<sup>2</sup> represents hydrogen or a group -NR'R'', with R' and R'', which may be identical or different, representing a linear or branched, saturated hydrocarbon-based group containing 1 to 12 carbon atoms.

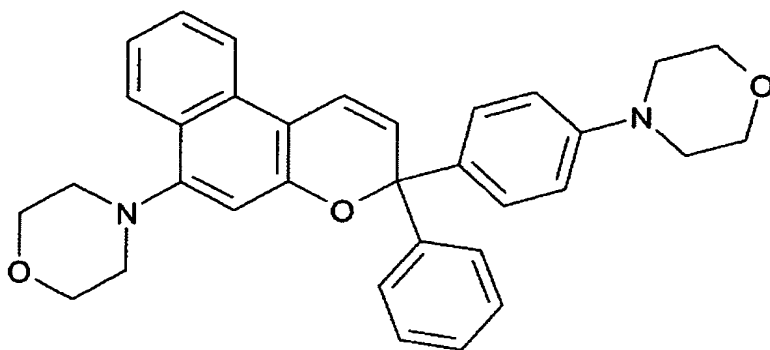
15 10. The composition according to Claim 1, in which the organic dye is selected from the group consisting of:

- 3,3-di(4-methoxyphenyl)-6-morpholino-3H-naphtho-[2,1-b]pyran of formula:

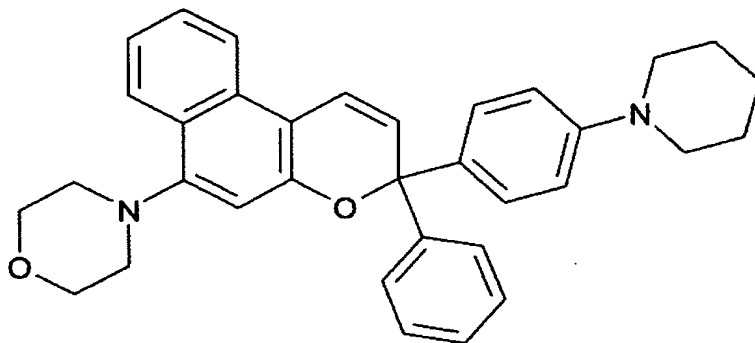




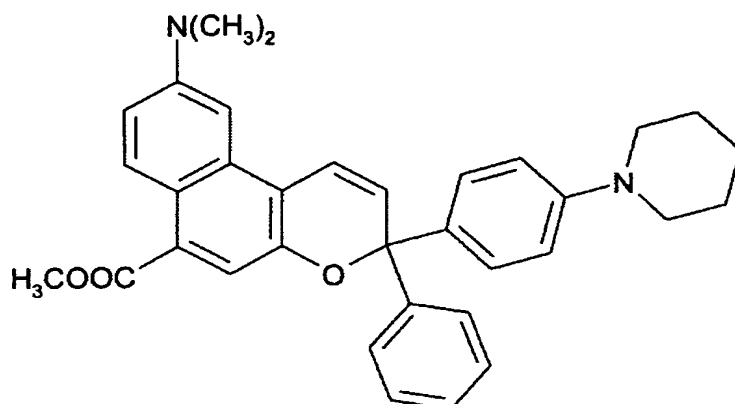
- 3-phenyl-3-(4-morpholinophenyl)-6-morpholino-3H-naphtho[2,1-b]pyran of formula:



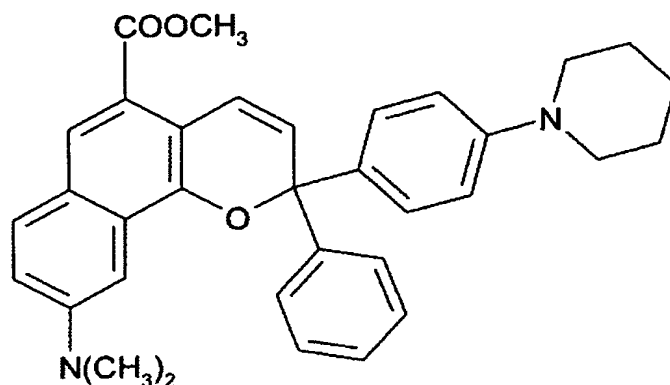
5 - 3-phenyl-3-(4-piperidinophenyl)-6-morpholino-3H-naphtho[2,1-b]pyran of formula:



- 3-phenyl-3-(4-piperidinophenyl)-6-methoxycarbonyl-9-N-dimethyl-3H-naphtho[2,1-b]pyran of formula:



- 2-phenyl-2-(4-piperidinophenyl)-5-methoxycarbonyl-9-N-dimethyl-2H-naphtho[1,2-b]pyran of formula:



5 - and mixtures thereof.

11. The composition according to Claim 1, in which the organic dye is included, alone or as a mixture, in an amount of from 0.001% to 20% by weight relative to the total weight of the cosmetic composition.

12. The composition according to Claim 1, in which the oily phase is polar and has a mean solubility parameter  $\delta_a$  according to the Hansen solubility space, at 25°C, of greater than or equal to 5.0 (J/cm<sup>3</sup>)<sup>1/2</sup>.

13. The composition according to Claim 1, in which the oily phase comprises 5% to 100% by weight, relative to the total weight of the oily phase, of one or more polar oils with a mean solubility parameter  $\delta_a$  according to the Hansen solubility space, at 25°C, of greater than or equal to  $5.0 \text{ (J/cm}^3)^{1/2}$ .

14. The composition according to Claim 1, in which the oily phase is apolar and has a mean solubility parameter  $\delta_a$  according to the Hansen solubility space, at 25°C, of less than 5.0.

15. The composition according to Claim 1, in which the oily phase comprises 5% to 100% by weight, relative to the total weight of the oily phase, of one or more apolar oils with a mean solubility parameter  $\delta_a$  according to the Hansen solubility space, at 25°C, of less than  $5.0 \text{ (J/cm}^3)^{1/2}$ .

16. The composition according to Claim 1, in which the oily phase comprises at least one oil selected from the group consisting of:

- animal or plant oils formed from fatty acid esters of polyols; fish oils or glyceryl tricaproylate, or plant or animal oils of formula  $R_1COOR_2$  in which  $R_1$  represents a higher fatty acid residue containing from 7 to 19 carbon atoms and  $R_2$  represents a branched hydrocarbon-based chain containing from 3 to 20 carbon atoms; liquid paraffin, liquid petroleum jelly, beauty-leaf oil, macadamia oil, rapeseed oil, coconut oil,

groundnut oil, palm oil, castor oil, jojoba oil, olive oil or cereal germ oil; shea butter oil; perhydrosqualene;

- synthetic esters and ethers; polyol esters; tridecyl trimellitate;
- fatty alcohols containing from 12 to 26 carbon atoms;
- linear or branched hydrocarbons of mineral or synthetic origin; isoparaffins;
- glycerides:

10 and mixtures thereof.

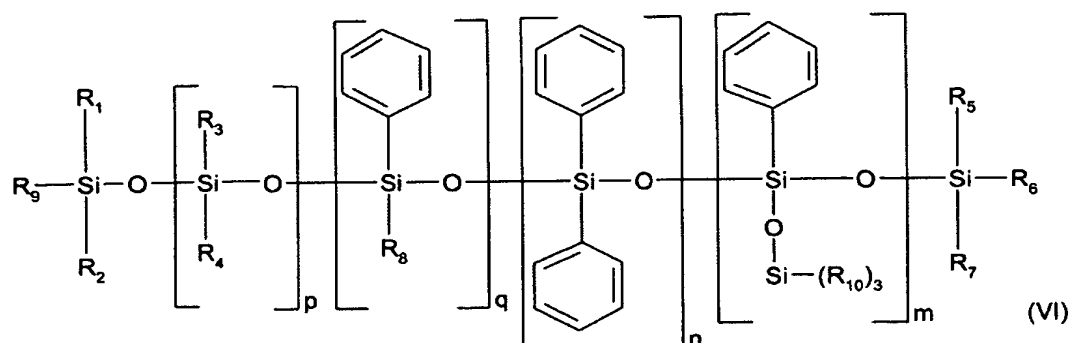
17. The composition according to Claim 1, in which the oily phase comprises at least one oil selected from the group consisting of octyldodecanol, hexyldecanol, octyldecanol, oleyl alcohol, castor oil, diisostearyl malate, glyceryl triheptanoate, glyceryl trioctanoate, capric/caprylic acid triglyceride, triisononanoil, tridecyl trimellitate, C6-C40 aliphatic hydrocarbons, petroleum jelly, hydrogenated or non-hydrogenated polydecenes, hydrogenated polyisobutene, squalane, polybutylenes and isononyl isononanoate; fluoro oils, and mixtures thereof.

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18. The composition according to Claim 1, in which the oily phase comprises at least one phenylsilicone oil of formula (VI), or a mixture of such oils:

25



in which

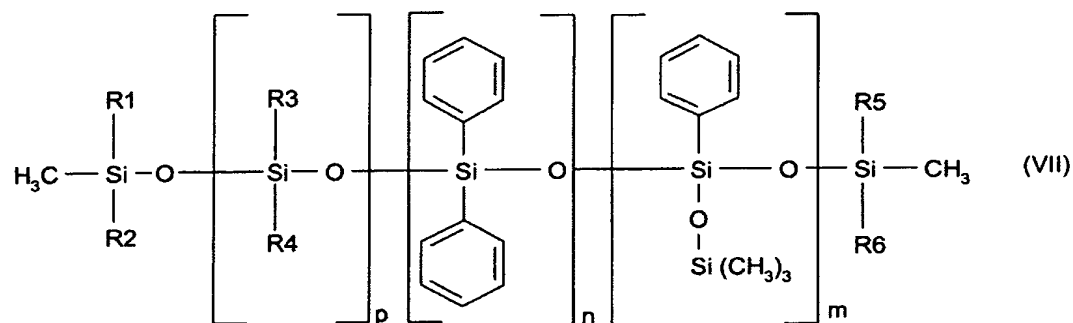
- R1 to R10, independently of each other, are saturated or unsaturated, linear, cyclic or branched C1-C30

5 hydrocarbon-based radicals,

- m, n, p and q are, independently of each other, integers between 0 and 900, with the proviso that the sum m+n+q is other than 0.

19. The composition according to Claim 18,  
 10 in which, in the phenylsilicone oil of formula (VI), the sum m+n+q is between 1 and 100 and/or the sum m+n+p+q is between 1 and 900.

20. The composition according to Claim 18, comprising a phenylsilicone oil of formula (VII):



in which:

- R1 to R6, independently of each other, are saturated

or unsaturated, linear, cyclic or branched C1-C30

hydrocarbon-based radicals,

- m, n and p are, independently of each other, integers  
between 0 and 100, with the proviso that the sum n+m is  
5 between 1 and 100.

21. The composition according to Claim 18,  
in which, in formulae (VI), R1 to R6, independently of  
each other, represent a saturated linear or branched  
C1-C30 hydrocarbon-based radical.

10 22. The composition according to Claim 18,  
in which, in formulae (VI), R1 to R6 are identical and  
are a methyl radical.

23. The composition according to Claim 18,  
in which the phenylsilicone oil is selected from the  
15 group consisting of phenyl trimethicones, phenyl  
dimethicones, phenyl trimethylsiloxo diphenylsiloxanes,  
diphenyl dimethicones, diphenyl methyl diphenyl  
trisiloxanes, and mixtures thereof.

24. The composition according to Claim 18,  
20 in which the phenylsilicone oil is present in an amount  
of between 5-90% by weight, relative to the total  
weight of the composition.

25. The composition according to Claim 18,  
in which the oily phase of the composition comprises  
25 one or more other additional cosmetically acceptable,  
polar or apolar, volatile or non-volatile, silicone-  
based or hydrocarbon-based oils, which is present in an

amount of between 0.1-50% by weight, relative to the total weight of the cosmetic composition.

26. The composition according to Claim 1, in which the oily phase is included in an amount of from  
5 10% to 90% by weight relative to the total weight of the cosmetic composition.

27. The composition according to Claim 1, further comprising other fatty substances selected from the group consisting of waxes, gums and/or pasty fatty  
10 substances of animal, plant, mineral or synthetic origin, and also mixtures thereof; and/or a particulate phase, which may comprise pigments, nacles, fillers, dyes and/or other photochromic compounds; and/or UV-screening agents; and/or an aqueous phase; and/or a  
15 surfactant and/or a thickener and/or a film-forming polymer.

28. The composition according to Claim 1, having a  $\Delta E$  value of greater than or equal to 5.

29. The composition according to Claim 1,  
20 which is in the form of a care and/or makeup product for body or facial skin, for the lips and for the hair, an antisen product or self-tanning product, or a hair product.

30. The composition according to Claim 1,  
25 which is in the form of a lipstick, a foundation, a makeup rouge, an eyeshadow, a free or compact powder, a tinted cream, a body makeup product, a skin-coloring

product, an eyeliner or a mascara.

31. A process for treating a support  
selected from the group consisting of mucous membranes,  
semi-mucous membranes, the skin and/or the integuments,  
5 comprising applying the composition of Claim 1 to the  
support.